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BEFORE THE ARIZONA CORPORATION COMMISSION

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4	GARY PIERCE Commissioner	COMP COMMISSION OCKET CONTROL
	PAUL NEWMAN	Arizona Corporation Commission
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9	IN THE MATTER OF THE APPLICATION OF HUALAPAI VALLEY SOLAR LLC, IN	\
10	CONFORMANCE WITH THE	Docket No. L-00000NN-09-0541-00151
11	REQUIREMENTS OF ARIZONA REVISED STATUTES §§ 40-360.03 AND 40-360.06,	}
	FOR A CERTIFICATE OF	Case No. 151
12	ENVIRONMENTAL COMPATIBILITY AUTHORIZING CONSTRUCTION OF	}
13	THE HVS PROJECT, A 340 MW)
14	PARABOLIC TROUGH CONCENTRATING SOLAR THERMAL GENERATING	REPLY IN SUPPORT OF
	FACILITY AND AN ASSOCIATED) APPLICANT'S APPLICATION
15	GEN-TIE LINE INTERCONNECTING THE GENERATING FACILITY TO THE) TO LIFT STAY
16	EXISTING MEAD-PHOENIX 500kV)
17	TRANSMISSION LINE, THE MEAD- LIBERTY 345KV TRANSMISSION LINE	}
	OR THE MOENKOPI-EL DORADO	(
18	500kV TRANSMISSION LINE.	}
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Hualapai Valley Solar LLC ("HVS") provides this Reply in support of HVS'

Application to Lift Stay on the Certificate of Environmental Compatibility ("CEC")

granted by the Arizona Corporation Commission (the "Commission") in Decision No.

71684 on April 14, 2010, and immediately stayed by the same Order.

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On July 8, 2010, HVS filed an Application to Lift Stay, in which HVS requested to have this matter set on the Open Meeting agenda as soon as possible so that the Commission may lift the stay on the CEC and allow HVS to proceed with the development of the Project.

On July 29, 2010, Denise Bensusan and Susan Moore-Bayer each filed a Response to HVS' Application to Lift Stay. These Responses reurge their positions on water usage. This brief replies to their Responses.

This matter involves HVS' application for a CEC for the Hualapai Valley Solar Project, a 340 MW parabolic trough concentrating solar thermal generating facility and an associated gen-tie line (collectively, the "Project"), in Mohave County. The benefits of the Project, including benefits to Mohave County, have been well documented in both the January and June hearings. To address the concerns raised by some residents of Mohave County about the Project's water usage, this record contains detailed hydrology studies and other evidence related to water. The evidence is overwhelming that there is ample available groundwater to operate the Project and HVS' plan to purchase effluent from the City of Kingman's Hilltop Waste Water Treatment Plant ("WWTP") will reduce the Project's use of groundwater even further. To address the water issue, the CEC contains Condition No. 4 that limits groundwater use and supports the use of effluent. The

¹ The January hearing before the Line Siting Committee is alternatively referenced in this brief as the "Committee hearing," and citations to the transcript from this hearing use the following format: "Tr. at ...". The June hearing before Administrative Law Judge Sarah N. Harpring, is alternatively referenced in this brief as the "§ 40-252 hearing," and citations to the transcript from this hearing use the following format: "§ 40-252 Proc. Tr. at ...".



evidentiary record also contains detailed discussions of the various cooling technologies and an explanation for why this particular plant can and must be wet-cooled.

I. There is sufficient available groundwater for the Project.

HVS has demonstrated that there is sufficient available groundwater for the Project. HVS presented William Victor, of Montgomery & Associates ("M&A"), as a witness in this case. Mr. Victor is a registered professional geologist with a graduate degree in hydrology and 30 years of experience in investigating hydrogeologic conditions. Tr. at 213:18-214:3. Led by Mr. Victor, M&A has conducted groundwater studies in the Hualapai Valley since 2005. Tr. at 217:18-218:1. M&A then compiled a comprehensive groundwater flow model that simulates the effect of groundwater pumping on groundwater levels in the Hualapai groundwater basin. Tr. at 214:15-215:5. This model was thoroughly reviewed by staff hydrologists with the Arizona Department of Water Resources ("ADWR") and approved by ADWR for use in projecting groundwater impacts of proposed developments. Tr. at 218:2-9.

In June and July of 2009, to investigate the potential impact of the Project on groundwater levels in the Hualapai basin, M&A used the ADWR-approved model to simulate groundwater levels over 30 years under a worst-case assumption that the Project would pump 3,000 acre-feet ("AF") of groundwater per year.³ Tr. at 218:10-17. The

² Tr. at 212-237, 471-72, and 478-481; § 40-252 Proc. Tr. at 60-63, 120-23, 153-169, 174, 180, 207, and 240-49.

Actual groundwater use by the Project will be less than 3,000 AF per year. The CEC limits groundwater use for cooling purposes to 2,400 AF per year. In addition, HVS intends to use effluent from the City's Hilltop WWTP to meet some of this demand. Tr. at



areas. Tr. at 215:20-24.

results were reported in a technical memorandum issued in November 2009. Mr. Victor concluded that the impact on groundwater levels from the Project would meet the criteria for impacts on existing wells imposed by ADWR in Active Management Areas ("AMAs") (even though the Hualapai Valley is not in an AMA). Tr. at 215:16-19. The model projected that, after operating for 30 years at 3,000 AF per year, the Project's incremental impact will be less than one foot of water level change for wells in the nearest residential

Based on his analysis, Mr. Victor also concluded that only a minute fraction of groundwater stored in the Hualapai groundwater basin is currently being used. Tr. at 215:11-15. According to his calculations, there is sufficient water in the aquifer to meet the Project's lifetime groundwater needs without significantly impacting other existing groundwater users. Tr. at 216:6-9; § 40-252 Proc. Tr. at 241:7-17. Finally, Mr. Victor noted that the amount of water HVS intends to use each year is approximately one-half of the amount of groundwater set aside by ADWR for the HVS site land when it was planned for residential use. Tr. at 215:25-216:5. A summary of Mr. Victor's conclusions is attached to this brief (slide 4 of Exhibit HVS-9 to Committee hearing).

Program applies only to residential subdivisions. ADWR website, http://www.azwater.gov/AzDWR/WaterManagement/AAWS/default.htm. There is no analogous program for industrial developments. HVS referred to the adequate water

that HVS could have submitted in this situation. ADWR's Adequate Water Supply

111:5-10; § 40-252 Proc. Tr. at 65:5-13. The Hilltop WWTP is currently producing over 1,600 AF of effluent per year and the City of Kingman anticipates it will be producing

almost to 2,300 AF per year by 2016. § 40-252 Proc. Tr. at 255:13-17, 269:25-270:6.

Regarding Ms. Bayer's statement that "there is a material change in the demand for water

and no water report has ever been submitted to the ADWR," there is no applicable report



Neither Ms. Bensusan nor Ms. Bayer provided evidence to contradict Mr. Victor's analysis and conclusions regarding the availability of sufficient groundwater and the magnitude of impacts on groundwater levels and surrounding wells. Instead, both take issue with Mohave County's water-related zoning and planning decisions. This is the wrong forum for those complaints. Entertaining them here would amount to an impermissible collateral attack on the County's decisions. *See Phelps Dodge Corp. v. El Paso Corp.*, 213 Ariz. 400, 404 (App. 2006). Nevertheless, Mohave County, through the testimony of County Manager Ron Walker and Divisional Manager of Planning and Zoning, Christine Ballard, explained the thorough and complete process followed by the County in amending its land use plan. *See* Summary of Mohave County's Testimony (Exhibit MC-1 to § 40-252 hearing). Prior to amending its land use plan, the County received and considered detailed materials on water usage, including public comments. § 40-252 Proc. Tr. at 312:1-313:12.

In addition, Ms. Bensusan inaccurately claims that: "Under conservative estimates, [the Commission's] failure to [require dry cooling] would result in upwards of 8,000 acrefeet of water per year *of further depletion* [of the Hualapai Valley aquifer]," Bensusan Response at 2 (emphasis added). The existing CEC limits the Project's water use to 3,000 AF per year for all uses and 2,400 AF of groundwater per year for cooling purposes. Condition No. 4. Even assuming Ms. Bensusan's other numbers and theories are accurate,

supply analysis performed for the residential subdivision that was previously planned for the site simply to demonstrate that sufficient groundwater exists.



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the Project could not have an impact on the aquifer that is two to three times greater than its maximum total water usage.

All of Ms. Bensusan's requests of the Commission are premised on the conclusion that the Project, as authorized by the CEC, will threaten the availability of groundwater in the Hualapai basin. If the Project will not threaten groundwater availability, imposing additional restrictions on the Project's groundwater use would unnecessarily threaten the Project's viability. HVS has demonstrated that the Project, contrary to Ms. Bensusan's claims, will not significantly impact the availability of groundwater in the Hualapai basin.

II. The Project will not proceed with dry or hybrid cooling.

A. Wet cooling is appropriate.

HVS agrees that water is a valuable natural resource that the Commission should consider in approving new power plants. Whether concentrating solar plants ("CSPs") constructed in dry climates should use wet or dry cooling should be addressed on a case-by-case basis by balancing the costs and benefits of wet versus dry cooling. That is, in fact, what other states, including California, are doing.

In her response brief, Ms. Bensusan states: "[A]ll of the most recent projects in the desert regions of California and Nevada will be either dry cooled or use effluent."

Bensusan Response at 2. This is an incorrect statement. The Abengoa Mojave Solar Project is a wet-cooled CSP plant planned to be built in the California portion of the Mojave Desert. Staff of the California Energy Commission released an assessment on May 25, 2010 concluding that "[t]he proposed use of *groundwater* for industrial cooling



would not significantly impact existing groundwater levels in the HVGB wells, the basin balance, or the quality of groundwater in the basin." Supplemental Staff Assessment (Part B) of the Abengoa Mojave Solar Project, at 5.9-45 (May 25, 2010) (emphasis added). The full assessment is available through the California Energy Commission's website. Docket No. 09-AFC-5.

In this case, the evidence overwhelmingly supports the Commission's decision to authorize wet cooling for the Project. Unlike many of the dry-cooled projects mentioned by Ms. Bensusan, there is both groundwater and effluent available for this Project. § 40-252 Proc. Tr. at 233:13-234:4. In this case, wet cooling would benefit the City of Kingman and its residents by providing a purchaser for the WWTP's effluent. This revenue will be used to pay for improvements that would otherwise be borne by the ratepayers and taxpayers of Kingman. § 40-252 Proc. Tr. at 281:24-282:9. In addition, HVS' planned use of effluent is consistent with and supportive of Arizona's Blue Ribbon Panel on Water Sustainability. § 40-252 Proc. Tr. at 235:18-236:2

As Mr. LaRow testified during the June hearing, dry cooling would increase the cost of energy from this Project by an estimated seven to nine percent.⁵ § 40-252 Proc. Tr. at 110:6-7, 114:5-9. Although Ms. Bensusan focuses on the associated capital costs, dry

⁵ Ms. Bensusan also attempts to discount the estimate of a seven to nine percent increase in costs resulting from dry cooling. This estimate comes from a comprehensive report by the Department of Energy ("DOE") for a "parabolic trough plant located in the Mojave Desert." The paragraph cited in Ms. Bensusan's Response for the principal that dry cooling costs are site specific refers to "a site in New Mexico" where "maximum daytime temperatures are considerably lower than in the Mojave Desert." Here, because the site is a desert area, seven to nine percent is the most applicable estimate available for the increased costs of dry cooling at the Project.



cooling affects a CSP plant financially in multiple ways.⁶ First, operating the fans in a dry cooling system requires a considerable amount of electricity. This internal consumption of energy reduces the amount of electricity available for sale and increases the unit cost at which the plant must sell the remaining electricity in order to maintain the same amount of revenue to service its debt. This is called the "parasitic load" of a plant and was explained by Mr. LaRow during the Committee hearing. Tr. at 164:24-165:17.

Dry-cooled plants are also much less efficient than wet-cooled plants at high temperatures. A graph in the report by the Department of Energy ("DOE") shows that the output of a dry-cooled CSP plant decreases as the temperature increases. Appendix A, p.ix (Figure 5). The output of the plant begins dropping faster at approximately 85 degrees and plummets at around 100 degrees. At 113 degrees, a CSP plant that would be producing 280 MWs using wet cooling could only produce 165 MWs using dry cooling. Mr. LaRow discussed this effect during the Committee hearing. Tr. at 165:18-166:22; *see also* Direct Prefiled Testimony of Michael LaRow (Exhibit HVS-6 to Committee hearing), at 9.

HVS opposes Ms. Bensusan's suggestion that the Project utilize a "hybrid system" for the same reason -- it would be an unnecessary, significant cost increase. The DOE

The preceding graph in the DOE Report shows that the output from a wet-cooled plant remains constant as the temperature increases. Appendix A, p.viii (Figure 4).

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⁶ Ms. Bensusan also seems to imply that the Commission should not value money from the federal government as highly as it would value money coming directly from a private developer. Bensusan Response at 7-8. Although HVS proposes to use federal aid, assistance from the federal government is ultimately taxpayer money that should be used as judiciously as possible.



Report estimates the cost penalty of a hybrid system at five to eight percent. DOE Report, at 14 & 17 (Table 2). A hybrid system would require HVS to construct a combination cooling system with both dry *and* wet cooling components. Tr. at 163:18-25. The dry cooling component would have the same issues with parasitic load and inefficiency at high temperatures as discussed in the preceding paragraphs.

All three of these effects -- higher capital costs, larger parasitic load, and decreased efficiency -- increase the levelized cost of electricity from a dry- or hybrid-cooled CSP plant as compared to a wet-cooled plant. The higher cost of energy associated with dry and hybrid cooling has a far greater impact on a Project's chances for success than just the system's capital costs because, in the competitive process of procuring a PPA, generators bid based on their levelized cost of energy. § 40-252 Proc. Tr. at 110:7-8, 114:10-13. For instance, requiring dry or hybrid cooling would put this Mohave County-based plant at a clear competitive disadvantage to CSP plants that have already been approved with wet cooling using groundwater, including some in Arizona. § 40-252 Proc. Tr. at 232:15-20.

B. This is a wet-cooled project.

HVS is far into negotiations for a PPA and for an engineering, procurement, and construction ("EPC") contract, and has reached an advanced stage of the DOE loan guarantee program. Tr. at 123:7-25; § 40-252 Proc. Tr. at 78:11-79:20, 207:25-208:5. All of these negotiations and prequalifications are based on the Project using wet cooling. Tr. at 123:7-25.



In addition, Mr. Bartlett explained during the § 40-252 hearing that requiring the Project to use dry or hybrid cooling would cause serious problems with obtaining financing, primarily because there are no utility-scale solar thermal dry- or hybrid-cooled plants operating in the world today. § 40-252 Proc. Tr. at 231:23-237:1, 236:8-237:1.

III. CEC Condition No. 4 regarding effluent should not be changed.

Condition No. 4 of the current CEC issued by the Commission adequately and appropriately addresses the Project's planned use of effluent as its primary water source. This condition requires HVS to "use effluent for cooling and all other non-potable water uses to the extent it is made available by the City of Kingman from its Hilltop [WWTP] and can be transported by the Applicant and at the Applicant's expense to the Project site." It also requires HVS to enter into a contract with the City "for sale, transmission and use of effluent generated by the Hilltop WWTP" within two years from the Commission's approval of the CEC. This condition appropriately addresses the issue because it requires HVS to sign a purchase agreement with the City within two years of issuance of the CEC and to use as much effluent as possible. At the same time, the condition does not require HVS be at the mercy of contingencies beyond its control.

As an alternative to dry cooling, Ms. Bensusan requests that the Commission revisit its decision and require "that HVS actually uses every ounce of effluent that is produced by the City of Kingman." Bensusan Response at 4. If adopted, this condition would prohibit the City of Kingman from selling effluent to additional parties or using it for other purposes. As an example of one such conflict, the Mayor of Kingman, John Salem,



testified during the § 40-252 hearing that the City is required by ADEQ to divert some of the effluent to certain wetlands.

A condition requiring the Project to use *only* effluent would not be feasible either. As explained by Mr. Bartlett during the June hearing, the Hilltop WWTP is owned and operated by the City of Kingman and HVS has no way of influencing how much effluent it produces or when it operates. § 40-252 Proc. Tr. at 193:1-4. In addition, there could be circumstances beyond HVS' control that would prevent HVS from being able to use effluent produced by the WWTP. If the Commission adopts a condition that the Project use only effluent and, *for any reason*, the Project does not receive enough effluent for its cooling needs, the Project would have to shut down, depriving the region of a significant, on-peak renewable generator and possibly subjecting HVS to substantial monetary penalties under the PPA.

Because of these factors, HVS' witnesses testified that a more restrictive condition regarding the Project's use of effluent would hurt the Project's chances of securing financing. Tr. at 129:21-131:16; § 40-252 Proc. Tr. at 67:19-25, 192:8-19.

IV. Other concerns raised by Ms. Bayer have been, or can be, addressed.

Many of Ms. Bayer's "non-water" concerns are addressed by the existing CEC, but a few warrant additional comment.

Committee hearing, and 267:13-270:20 of the § 40-252 proceeding transcript.

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⁸ Ms. Bayer makes several allegations regarding the amount of effluent that will be available to the Project but provides no citations to the record. The Mayor's discussion about available effluent can be found at 254:25-256:3, 259:4-21 of the transcript from the



A. Environmental Impact Statement

Ms. Bayer requested a condition making the CEC approval "subject to a timely submitted environmental impact study that explains adequate care has been taken to protect all wildlife in the area, including bats." Bayer Response, Requested Condition No. 3. Ms. Bayer's concern will be addressed by the completion of the National Environmental Policy Act ("NEPA") process for the Project, which is required by federal law. In fact, current CEC Condition No. 3 mandates such compliance. Michael Warner testified during the June hearing that he is in the process of preparing an Environmental Impact Statement ("EIS") for the Project in coordination with the Bureau of Land Management and the Western Area Power Administration, which is part of the federal DOE. § 40-252 Proc. Tr. at 83:25-84:12, 84:22-24. Mr. Warner also testified that the Environmental Protection Agency will review the draft EIS and may provide comments. § 40-252 Proc. Tr. at 84:13-16, 102:1-4.

B. Protection of bats

Ms. Bayer expressed a concern that the Project could harm various species of bats by releasing particulate matter ("PM") into the air as water evaporates and that such PM could be toxic to bats. Bayer Response at 2-3; *see also* § 40-252 Proc. Tr. at 145:14-147:4. Emissions of PM-10 will be addressed in the air permit that the Project will obtain from the Arizona Department of Environmental Quality ("ADEQ"). In addition, the EIS will include an analysis of the Project's expected impacts on bats. *See* Direct Prefiled Testimony of Michael Warner (Exhibit HVS-12 to Committee hearing), at 4-5. Ms. Bayer



did not provide evidence for her assertion that this PM could harm bats and, in response to her questions on this topic during the § 40-252 hearing, Mr. Warner stated that he is "not aware of any studies anywhere that suggest that bats are dying as a result of eating dust." § 40-252 Proc. Tr. at 146:4-5. In any event, at the instigation of Siting Committee Member Mundell, the existing CEC adopts the State Fish & Game Department's recommendation with respect to bats. Condition No. 16; *see also* Condition No. 15. In sum, Ms. Bayer's concerns about bats will be adequately addressed by the air permit from ADEQ, the federal NEPA process, and these two CEC conditions.

C. Fire protection plan

Ms. Bayer also requests a condition making the CEC approval "subject to HVS submitting a fire protection and emergency plan." Bayer Response, Requested Condition No. 4. Mr. LaRow testified during the June hearing that the Project will include fire protection and emergency components. § 40-252 Proc. Tr. at 148:25-149:6. HVS is willing to file a final description of such components with the Commission before the Project commences operations.

D. County roads

Finally, Ms. Bayer requested a condition addressing "[t]he excessive use of the roads by the semi trucks that will be necessary to build HVS." Bayer Response, Requested Condition No. 5. During the June hearing, Mr. Bartlett testified that HVS will "do what is required by the county in terms of permitting for roads or infrastructure upgrades." § 40-252 Proc. Tr. at 177:7-8. Similarly, Mr. LaRow explained that this issue

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is "something ... the county would decide based on based on existing regulations or permit requirements." § 40-252 Proc. Tr. at 177:15-17. Later during the hearing, Ms. Ballard, testified that the County's general policy is "that any improvements and infrastructure would be borne by the Applicant." § 40-252 Proc. Tr. at 301:11-12. Ms. Ballard's testimony addresses Ms. Bayer's concerns that the County not unduly bear costs that are typically borne by developers. This approach is also fair to HVS because it provides for HVS to be treated in the same way as other businesses and developers in Mohave County.

Conclusion

HVS has demonstrated that there is sufficient groundwater available to operate the Project as a wet-cooled facility. In addition, HVS is committed to using available effluent. Neither dry nor hybrid cooling is appropriate in this case for the reasons described above. HVS respectfully requests that this matter be placed on the August Open Meeting agenda and the stay be lifted so that this Project may proceed.

RESPECTFULLY submitted this **5**th day of August, 2010.

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ORIGINAL and twenty (20) copies of the 1 foregoing filed this **b** day of August, 2010, with: 2 The Arizona Corporation Commission 3 Utilities Division – Docket Control 1200 W. Washington Street 4 Phoenix, Arizona 85007 5 6 COPY of the foregoing hand delivered this 6 to day of August, 2010, to: 7 8 Chairman Kristin K. Mayes Arizona Corporation Commission 9 1200 W. Washington Street Phoenix, Arizona 85007 10 Commissioner Gary Pierce 11 Arizona Corporation Commission 1200 W. Washington Street 12 Phoenix, Arizona 85007 13 Commissioner Paul Newman Arizona Corporation Commission 1200 W. Washington Street 14 Phoenix, Arizona 85007 15 Commissioner Sandra D. Kennedy 16 Arizona Corporation Commission 1200 W. Washington Street 17 Phoenix, Arizona 85007 18 Commissioner Bob Stump **Arizona Corporation Commission** 19 1200 W. Washington Street Phoenix, Arizona 85007 20 Sarah N. Harpring, Administrative Law Judge 21 **Arizona Corporation Commission** 1200 W. Washington Street 22 Phoenix, Arizona 85007 23 Charles Hains, Legal Division Arizona Corporation Commission 1200 W. Washington Street 24 Phoenix, Arizona 85007 25 26

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Steve Olea, Director 1 **Utilities Division** 2 Arizona Corporation Commission 1200 W. Washington Street 3 Phoenix, Arizona 85007 4 **COPY** of the foregoing served electronically 5 this Let day of August, 2010 to: 6 John Foreman, Chairman 7 Arizona Power Plant and Transmission Line Siting Committee Office of the Attorney General 8 PAD/CPA 1275 W. Washington Street 9 Phoenix, Arizona 85007 John.Foreman@azag.gov 10 Susan A. Moore-Bayer 7656 West Abrigo Drive 11 Golden Valley, Arizona 86413 rbbdci@frontiernet.net 12 13 Timothy M. Hogan Arizona Center for Law in the Public Interest 2020 E. McDowell Road, Suite 153 14 Phoenix, Arizona 85004 15 Attorney for Denise Herring-Bensusan Thogan@aclpi.com 16 Robert A. Taylor 17 Mohave County Attorneys Office P.O. Box 7000 Kingman, Arizona 86402 18 Robert.Taylor@mohave.az.us 19 20 21 22 23 24 25 26

ATTACHMENT

Findings

- Only a minute fraction of groundwater stored in Hualapai Valley is currently used
- Projected impacts to existing wells by the proposed HVS pumping would meet the stringent criteria imposed by the State for AMAs
- substantial and is much less than one foot of water level change in After 30 years, the projected impact of HVS pumping is not the Kingman, Dolan Springs, and Valle Vista areas
- The amount of available groundwater set aside by ADWR for the HVS site land is about twice as much as HVS intends to use
- needs for the life of the Project without significantly impacting other There is sufficient water available in the aquifer to meet the water existing groundwater users